



Armed Forces College of Medicine

AFCM



Soft tissue tumors



- They include mesenchymal tumors **other than bone and cartilage**.
- Current evidence indicates that these tumors arise from ***pluripotent mesenchymal cells*** and not mature mesenchymal cells.
- **Benign soft tissue tumors are much more common.**

Tumors of adipose tissue	1. Lipoma.	2. Liposarcoma
Tumors of fibrous tissue	1. Fibroma	2. Fibrosarcoma
Tumors of smooth muscles	1. Leiomyoma	2. Leiomyosarcoma
Vascular tumors	1. Hemangioma 3. Hemangioendothelioma 4. angiosarcoma	2. Lymphangioma



Lipoma

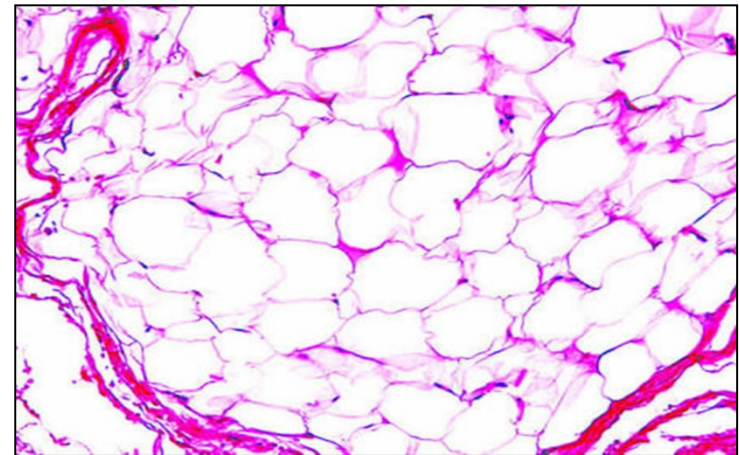


Lipoma: is the most common soft tissue tumor

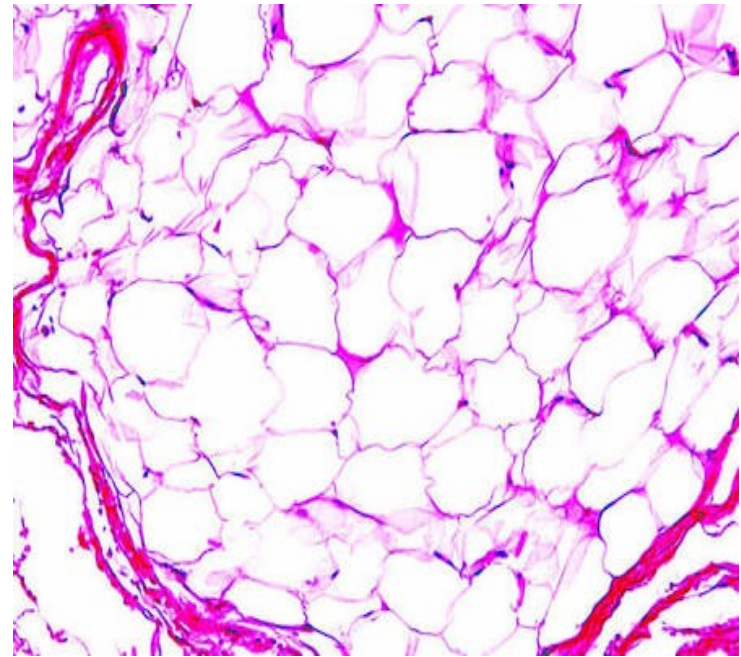
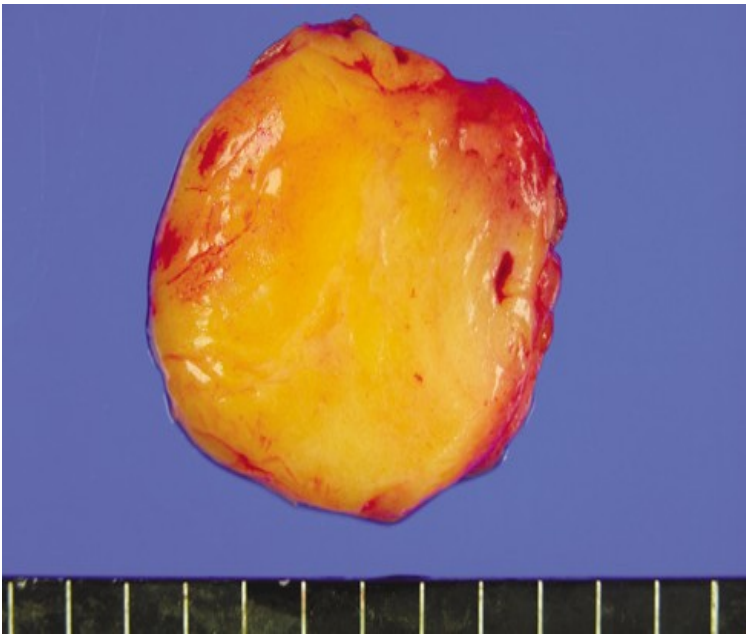
It is a slowly growing **benign** tumor of adipose tissue that arise from subcutaneous fat, intermuscular septae, breast, omentum, GI.....

Gross picture: **well defined** **capsulated** **mass with yellowish soft lobulated greasy cut surface.**

Microscopic picture: **capsulated with delicate fibrous vascularized septae dividing the tumor into lobules formed of mature fat cells.**



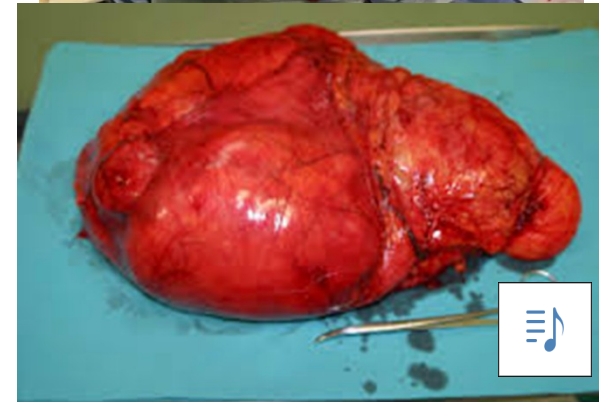
Lipoma



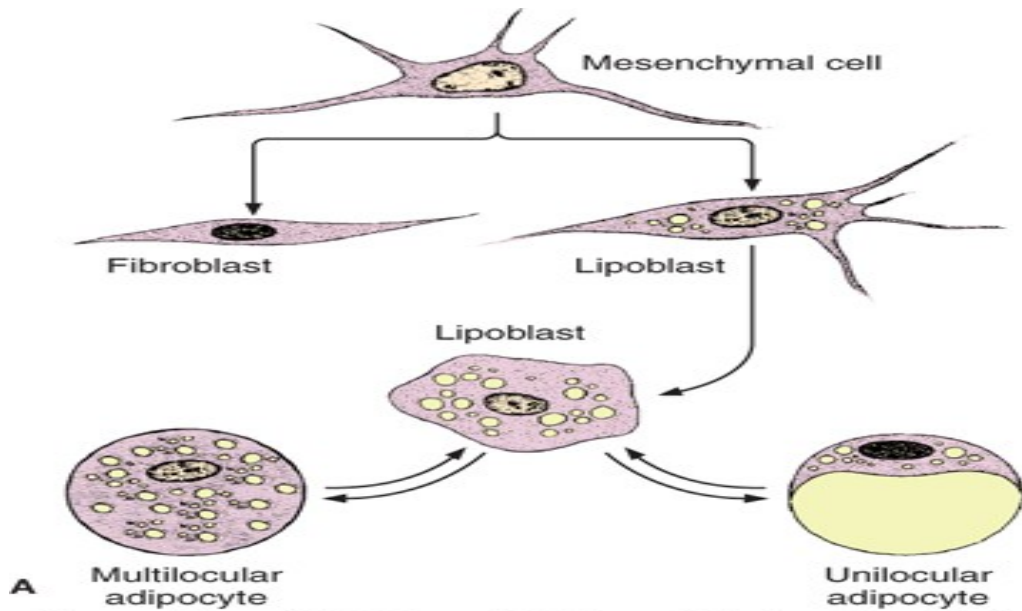
Liposarcoma



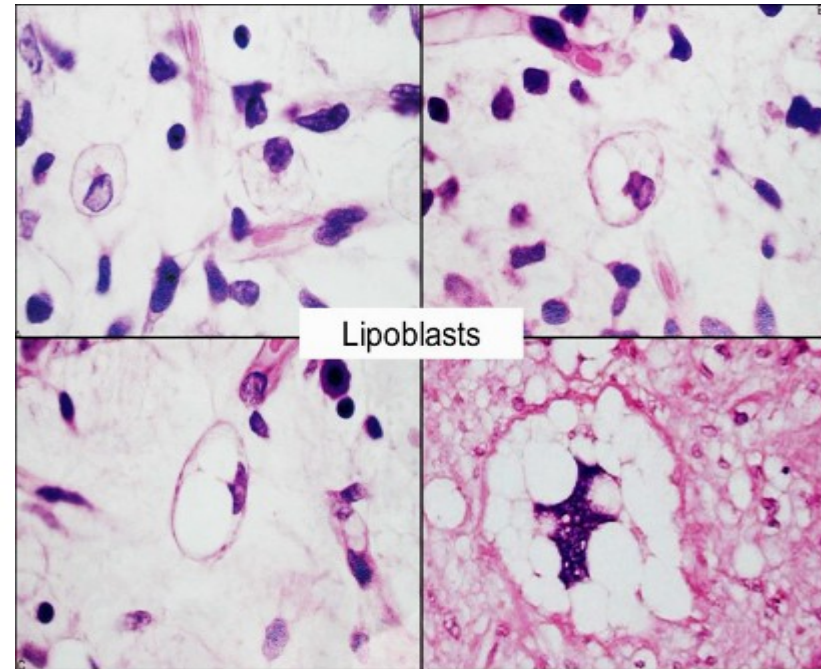
- ❖ **Liposarcoma**: malignant tumor of adipose tissue.
- ❖ They occur in the **fifth to sixth decade**.
- ❖ They arise commonly in the **retroperitoneum** as relatively :
- **large** well circumscribed masses, **non-capsulated** with glistening yellowish cut surface.



Liposarcoma



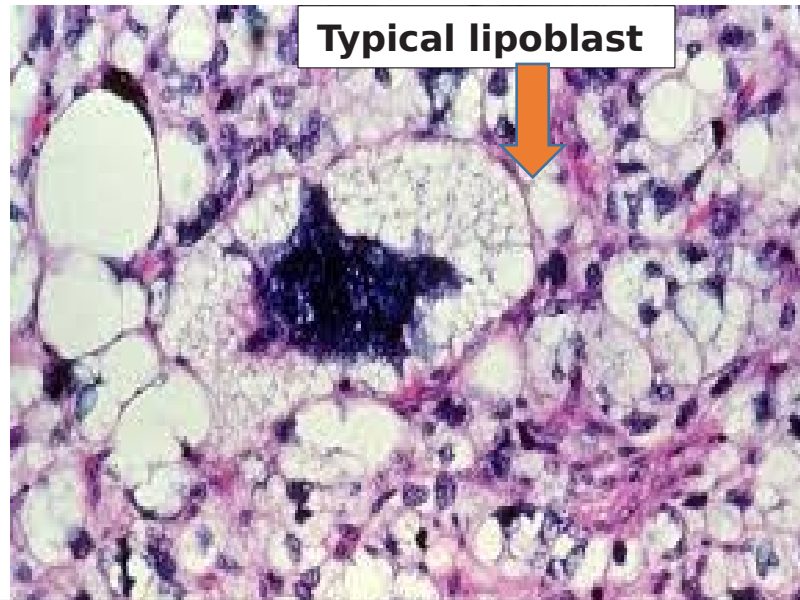
Source: Howard M. Reisner: Pathology: A Modern Case Study
www.accessmedicine.com
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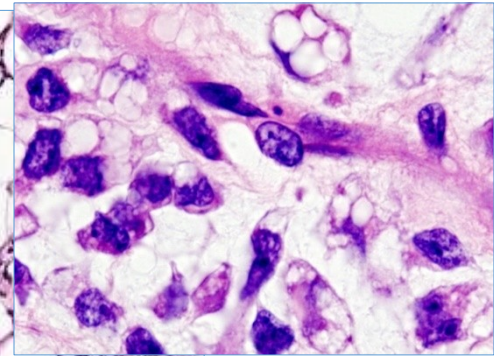
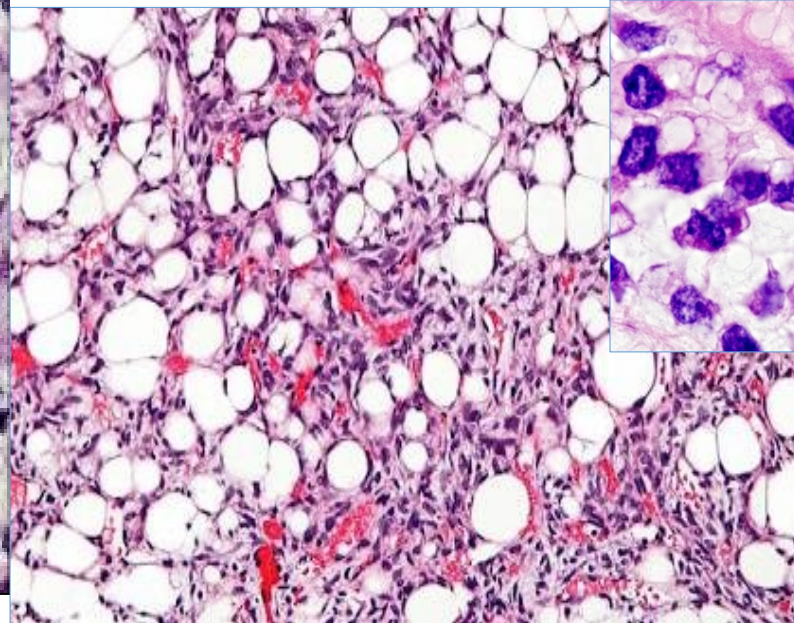
Extended Modular Program



Liposarcoma



Typical lipoblast



Lipoblasts

- Primitive cells indicative of fatty differentiation /**univacuolated** and **multivacuolated**
- Indented atypical nucleus recapitulating fetal fat cells.

Extended Modular Program



Tumors of adipose tissue



Lipoma



Liposarcoma



Tumors of smooth muscle



1. Leiomyoma: Benign smooth muscle tumors.

They are common in the **uterus**, and **gastrointestinal tract**.

2. Leiomyosarcoma: rare malignant smooth muscle tumors.

Can occur in the uterus, and stomach. Present grossly by a **large bulky fleshy mass** with wide areas of hemorrhage and **necrosis**.



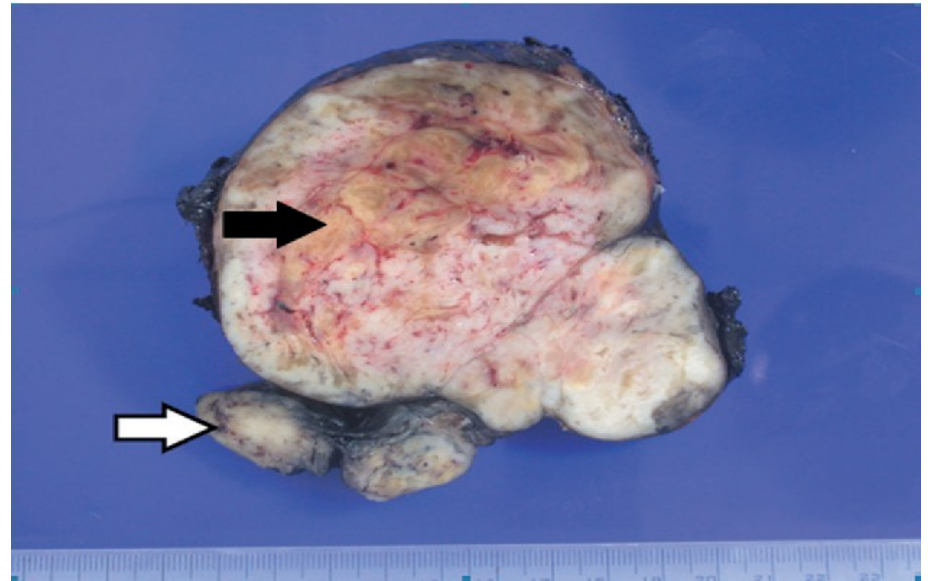
Tumors of smooth muscle



Leiomyoma



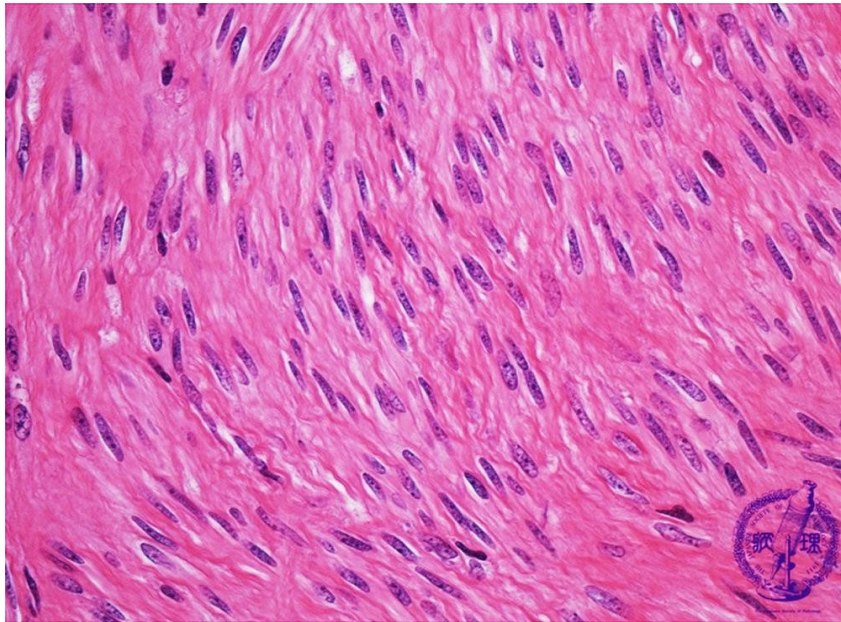
Leiomyosarcoma



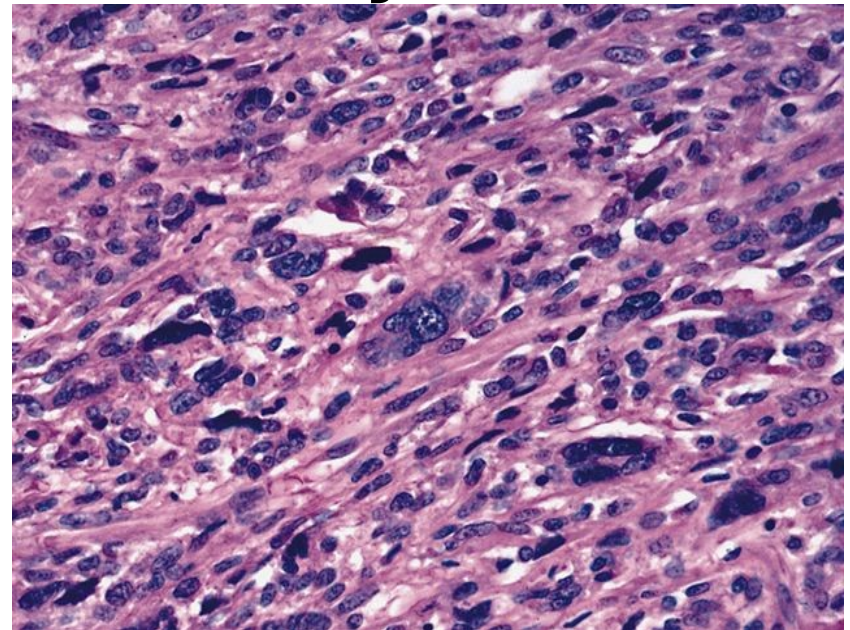
Tumors of smooth muscle



Leiomyoma



Leiomyosarcoma



Benign vascular tumors



1- Hemangioma: Benign vascular tumor formed of vascular spaces filled with blood commonly seen in infants or children.

- It has two histologic variants:
 1. Capillary hemangioma: **the commonest type**
 2. Cavernous hemangioma.
- **Gross**: It is well defined non capsulated tumor.
- **Microscopic**: It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective



Hemangioma



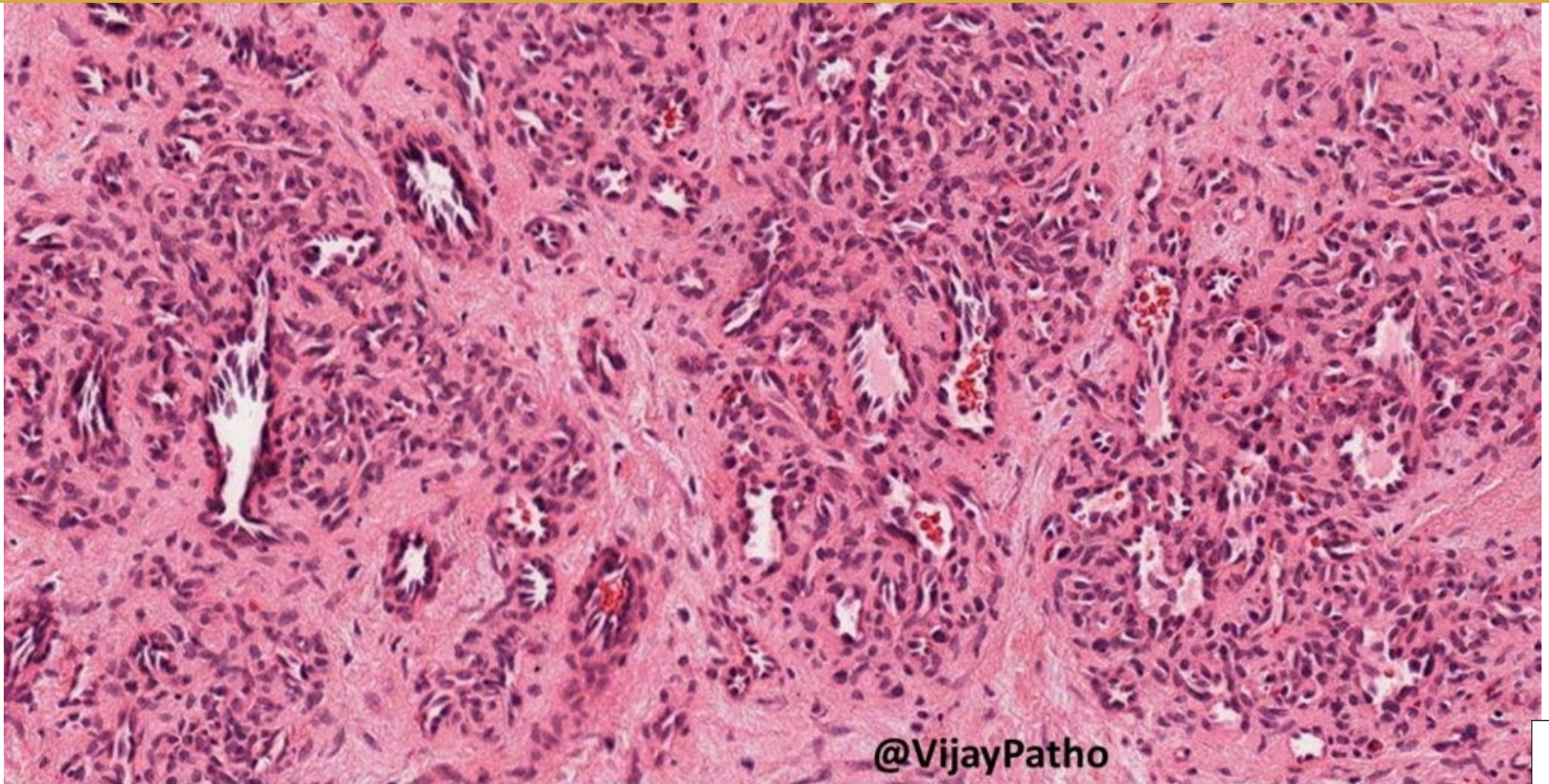
Capillary hemangioma
cavernous hemangioma



Cavernous Hemangioma



Capillary Hemangioma



Cavernous Hemangioma



Large spaces filled with blood



@VijayPatho



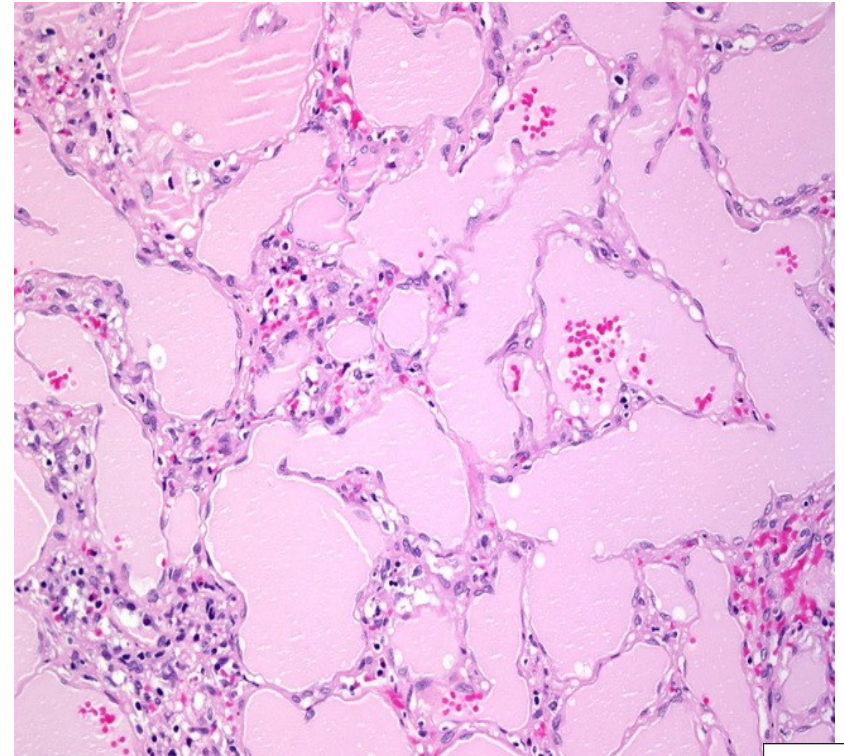
Benign vascular tumors



- 2- Lymphangioma:** Benign vascular tumor formed of lymphatic vascular spaces filled with lymph (not blood) & often congenital
- It is well defined non capsulated tumor.
 - It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective tissue stroma rich in lymphocytes.

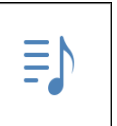


Lymphangioma (Cystic Hygroma)





Osteomyelitis



Osteomyelitis



Definition:

Inflammation of bone & bone marrow.

I- Infection.

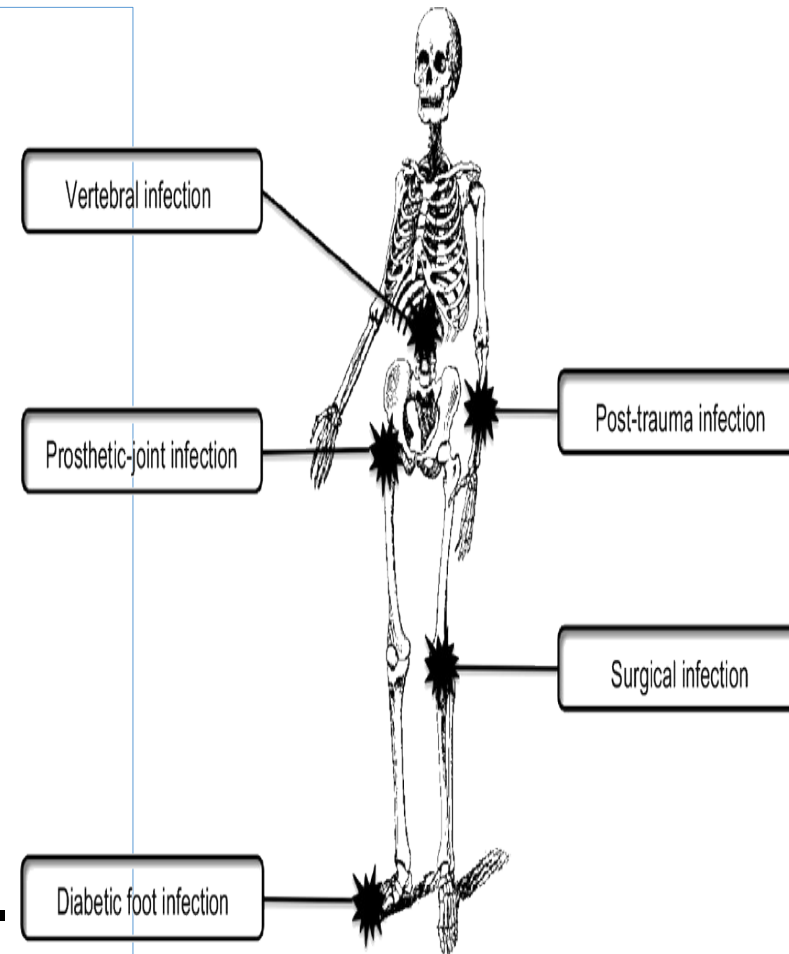
Predisposed by:

A- Trauma or surgical procedure.

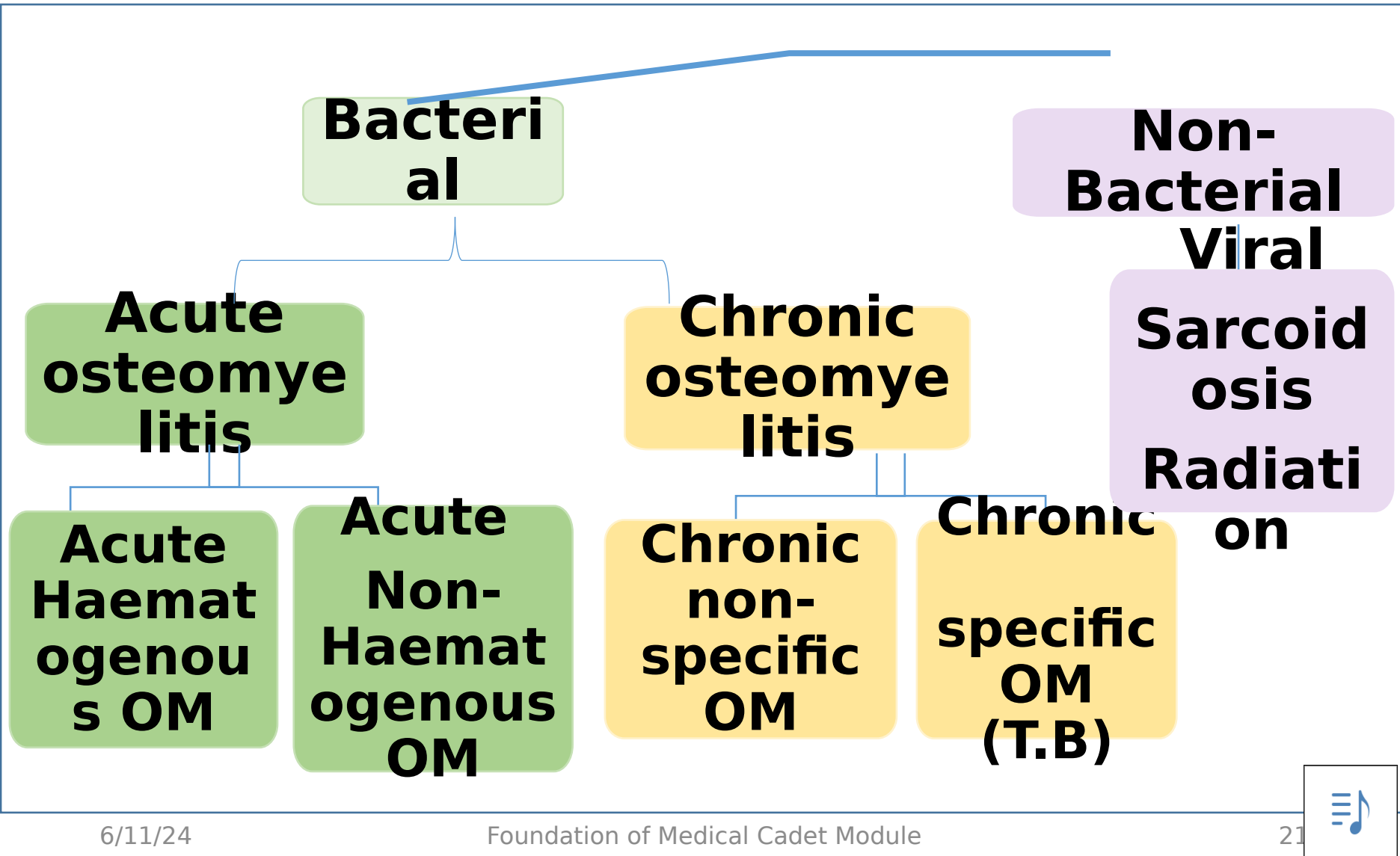
B- Vascular insufficiency.

C- Bacterial colonization.

II- Non -Infection.



Osteomyelitis



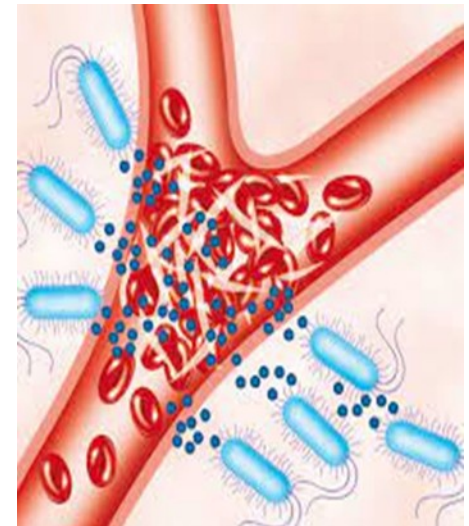
Acute Hematogenous Osteomyelitis



❖ Most common in children

❖ The organisms:

- Staph. aureus in 80-90% of cases
- Less commonly E.coli , Salmonella, Staph albus Pneumococci or Streptococci.



Acute Hematogenous Osteomyelitis



Throat
Tonsils
Teeth



Skin infection
Paronychia
Furuncle
Infected wound



Urinary tract infection



Gastrointestinal infection
Salmonella
Typhoid
Appendicitis
Peritonitis
Umbilical infection



Lung infection
Pneumonia
Abscess
Tuberculosis



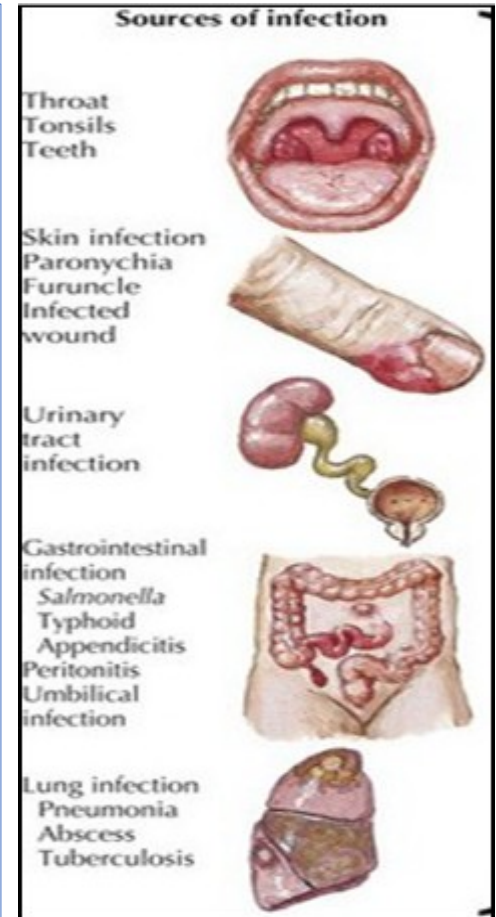
B



Acute Hematogenous Osteomyelitis



1. The organisms are derived from remote infections (e.g. respiratory, intestinal, urinary, oral, or skin).
2. They reach the blood stream (bacteraemia) following trivial injuries such as intestinal mucosal abrasions during defecation or slight oral mucosal injuries due to



Acute Hematogenous Osteomyelitis



Pathogenesis:

The bones most commonly affected

THE LONG BONES □ vertebrae.

The location of the lesions within the affected long bone is influenced by the vascular circulation, which changes with age.



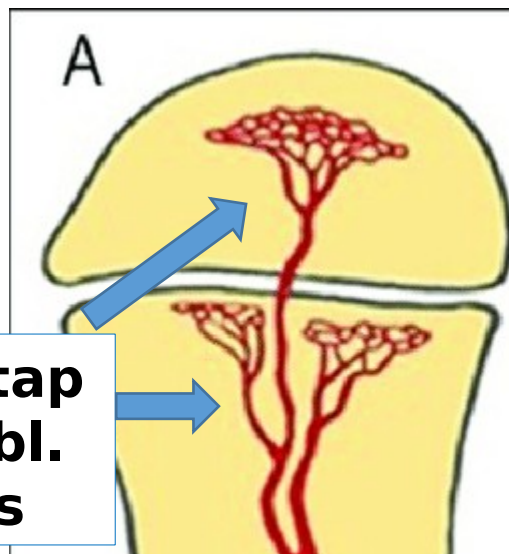
Acute Hematogenous Osteomyelitis



Infants < 18 mon.

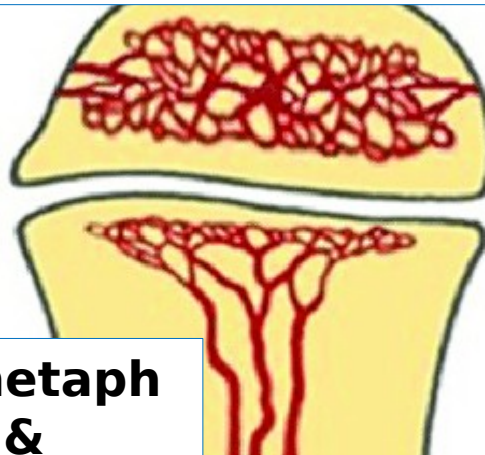
children (18 mon. to 16 yrs

closure of the growth plate

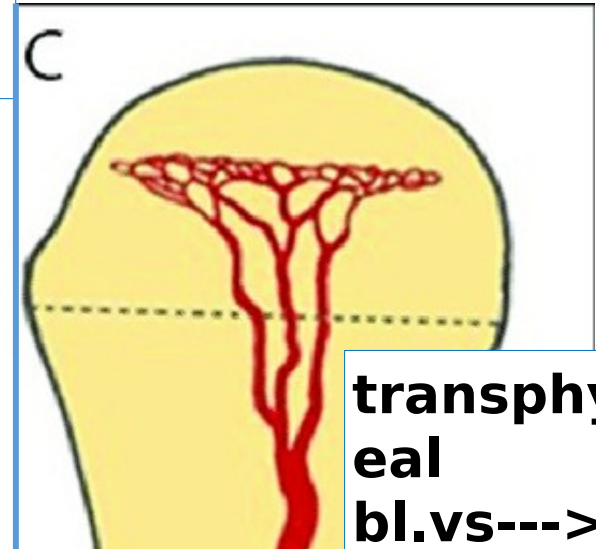


**metaph.
h. bl.
Vs**

epiphysis = its own bl.vs



**metaph
v &**



**transphys
eal
bl.vs--->**

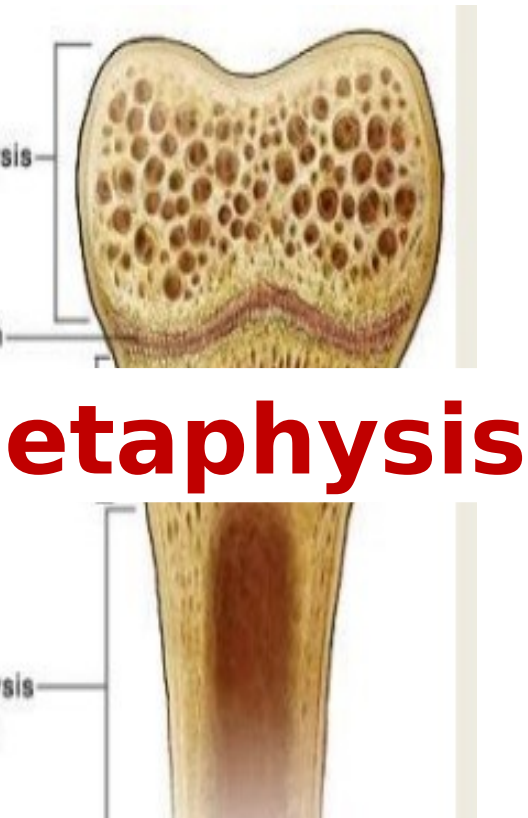
A natural barrier is formed by the physis preventing spread of OM in the epiphysis and joints. Therefore children **18 mon. & 16 yrs** will present with an



Acute Hematogenous Osteomyelitis



Childr



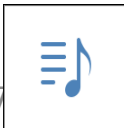
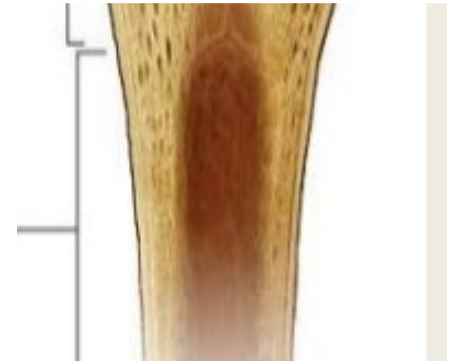
etaphysis

1. The most vascular part of bone
2. The blood flow within the metaphysis is normally slow
3. Metaphysis is the most subjected part of bone to trauma (trauma is known to be a

Adults



Metaphysis

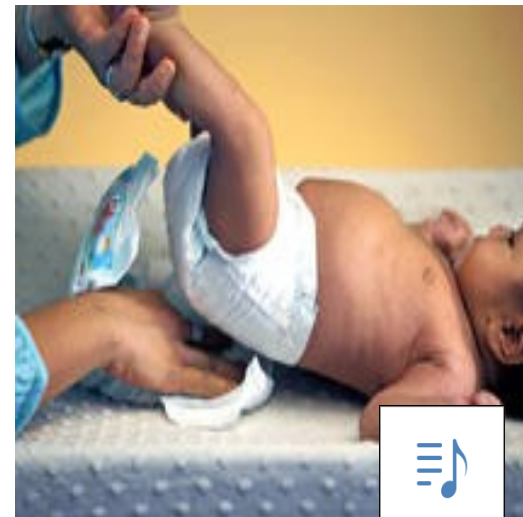


Acute Hematogenous Osteomyelitis



Clinical presentation

- The main hallmark is **fever** with localized **bony tenderness**
- In neonates □ **pseudoparalysis** and pain on **diaper change**



Pathogenesis of Acute Hematogenous Osteomyelitis

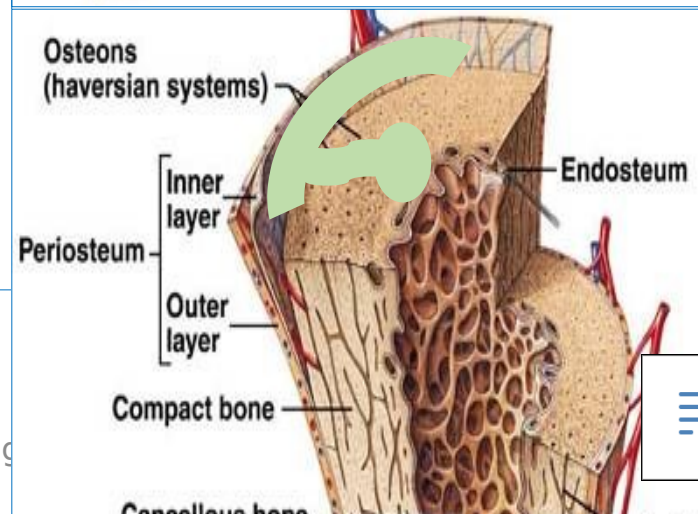
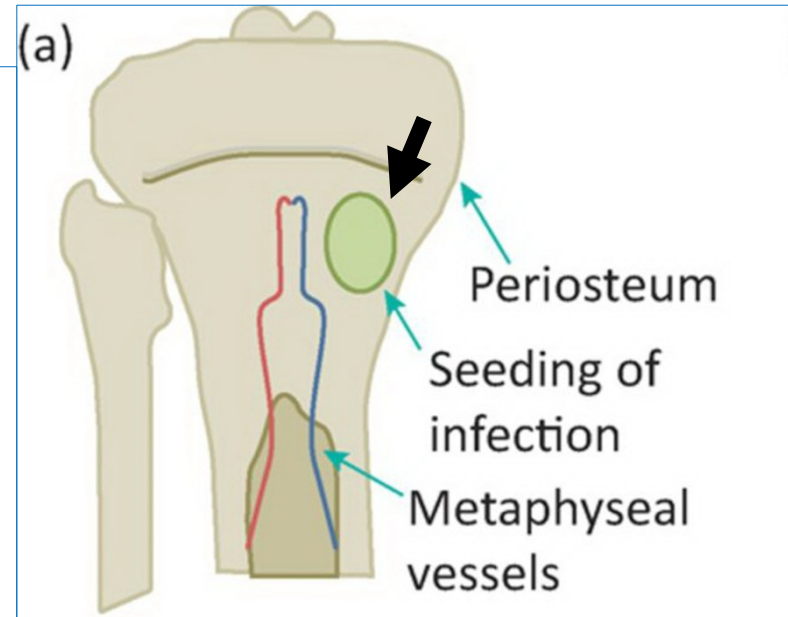


1. The initial lesion is a **suppurative focus** in the **metaphysis**.
2. **Spread** of infection occurs penetrates the **endosteum** ----> through the **Haversian system** --> collects **under the periosteum**

---> **Subperiosteal abscess**

6/11/24

Department of Pathology



Acute Hematogenous Osteomyelitis

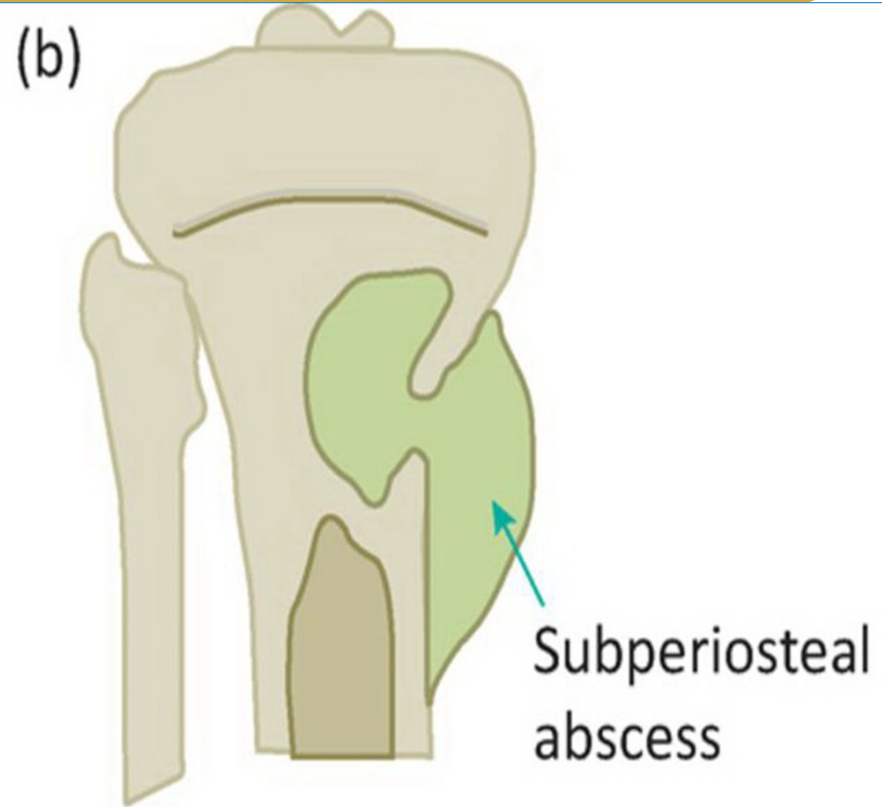


3. Bone necrosis

due to:

A. Bacterial toxins.

B. Ischemia due to stretching, compression or thrombosis of periosteal vessels.

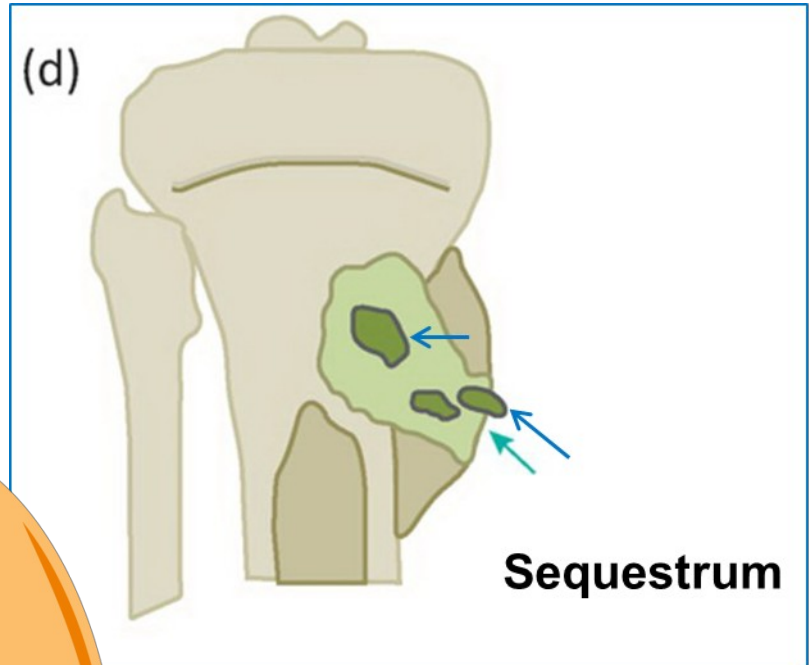
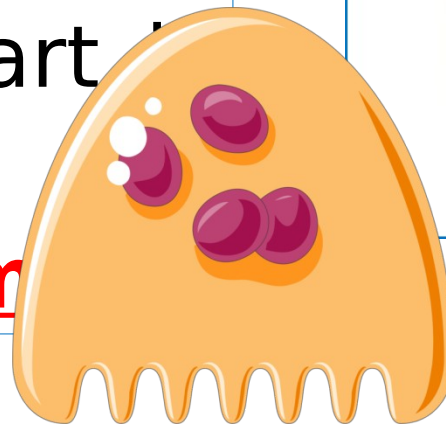


Acute Hematogenous Osteomyelitis

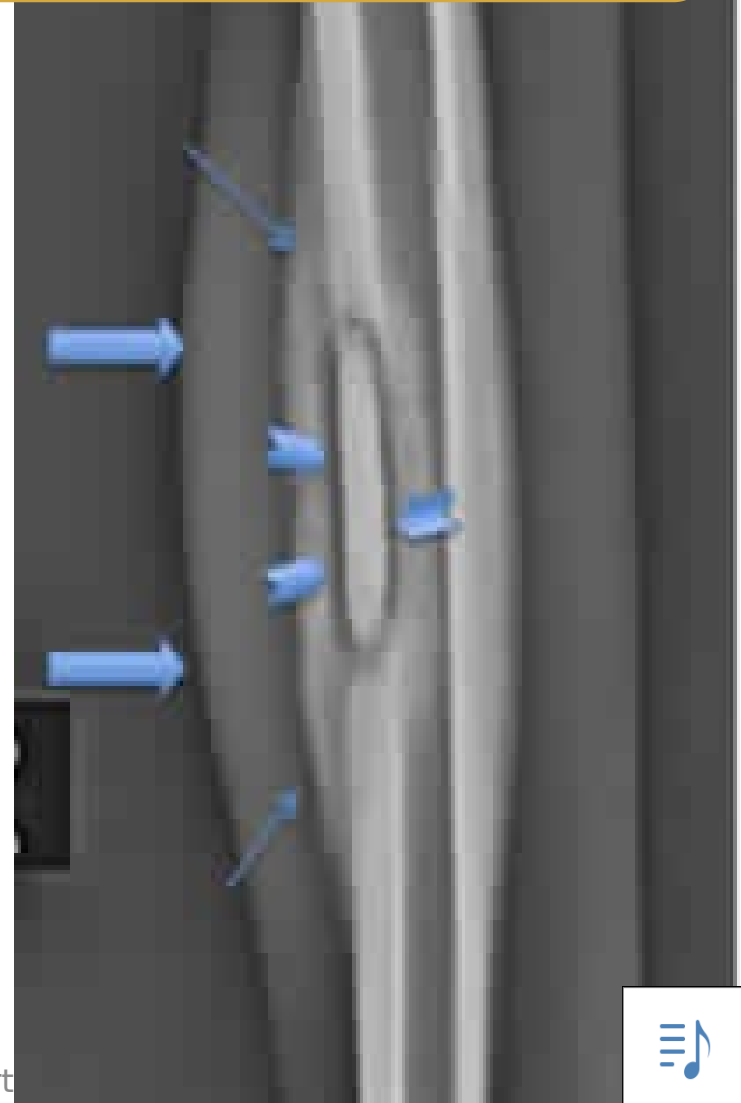


4. Separation of the necrotic bone by action of osteoclasts. This separated part is called

Sequestrum



Acute Hematogenous Osteomyelitis

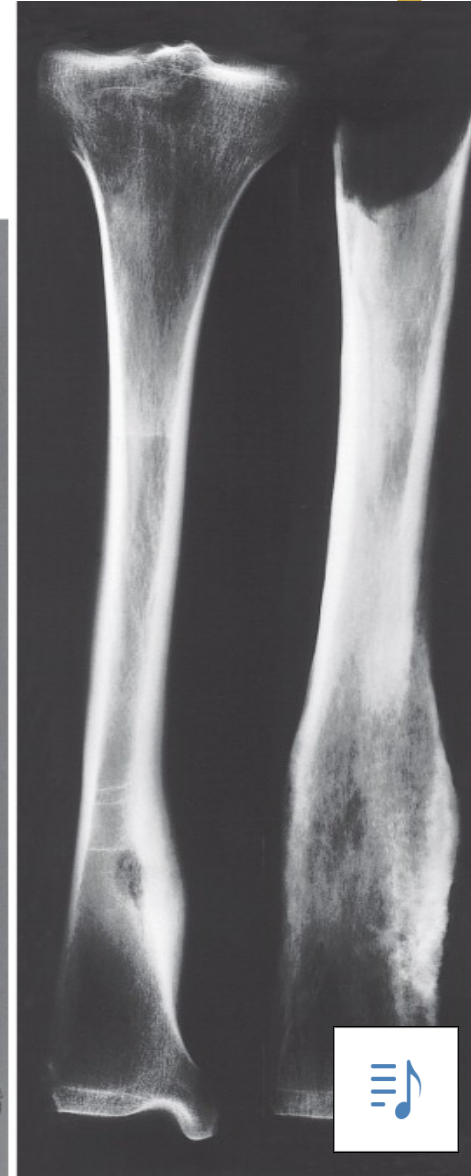
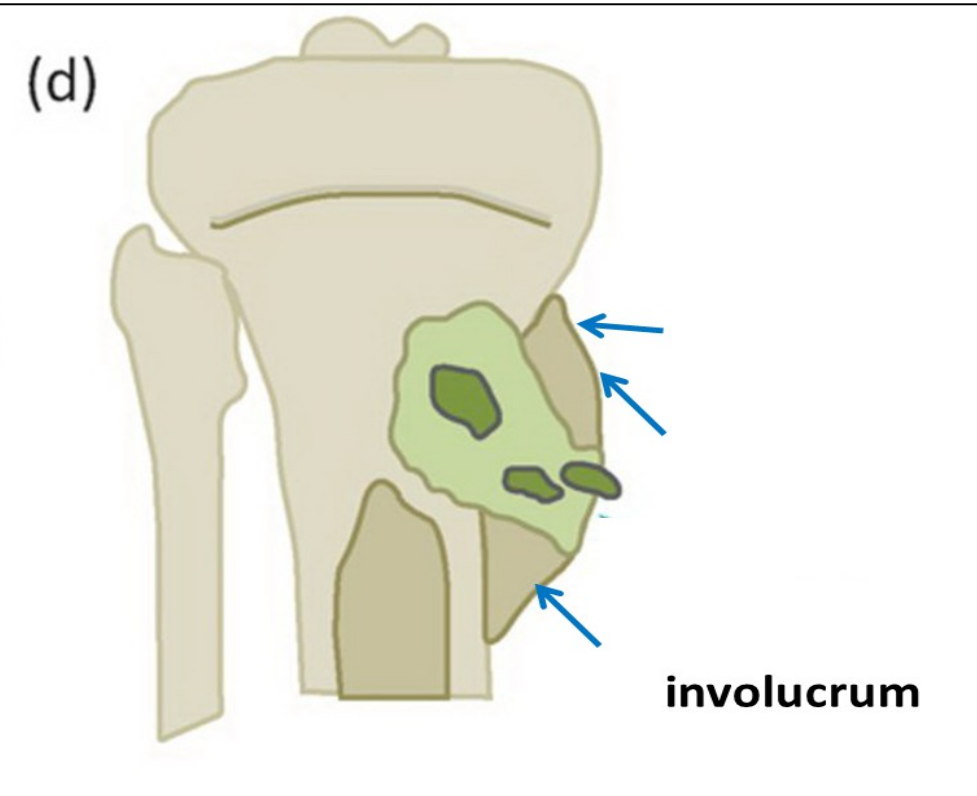


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Acute Hematogenous Osteomyelitis



Acute Hematogenous Osteomyelitis

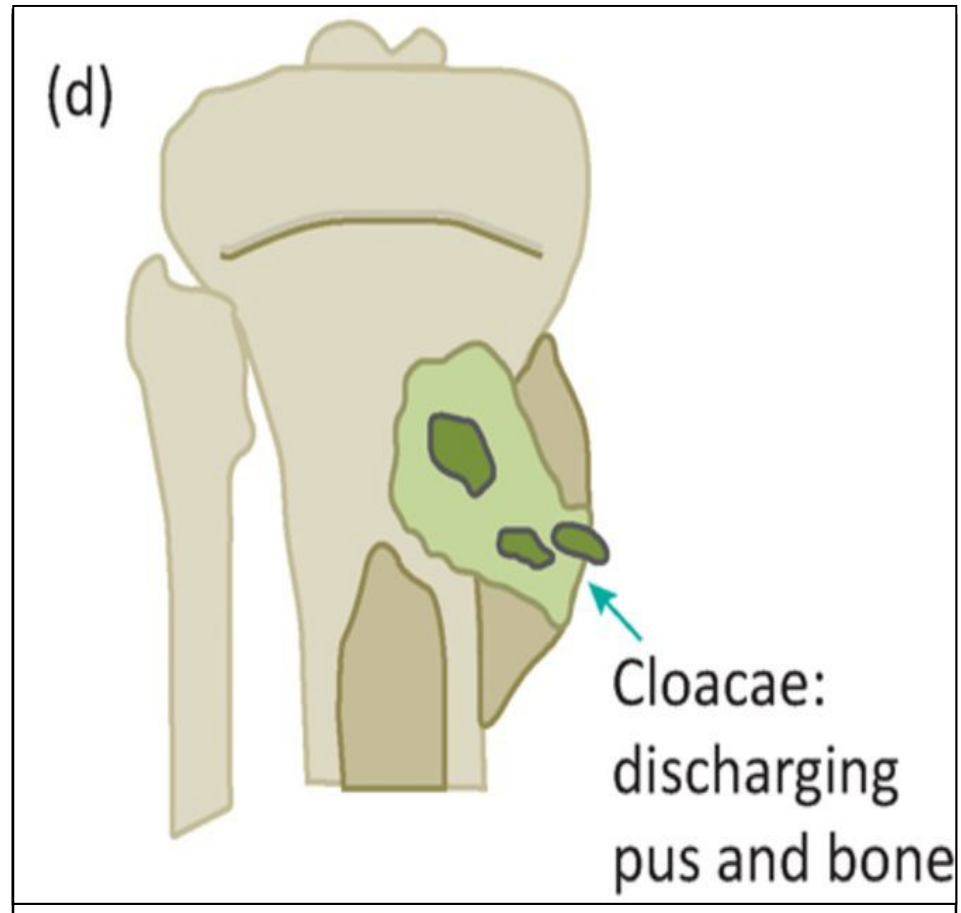


The sinuses now appear as thick-walled holes called **cloacae**.

This occurs in the chronic phase

(d)





Acute Hematogenous Osteomyelitis



Complications:

1. Pathological fracture.
2. **Direct spread** of infection → arthritis, myositis, neuritis..
3. **Blood spread** of infection → toxemia, septicaemia and pyaemia.
4. **Chronic suppurative osteomyelitis.**

This may be further complicated by:

a) Secondary amyloidosis.

b) Epithelization of the sinuses which may later give rise to **squamous cell carcinoma**



Acute Hematogenous Osteomyelitis



PATHOL

Osteoclast effect

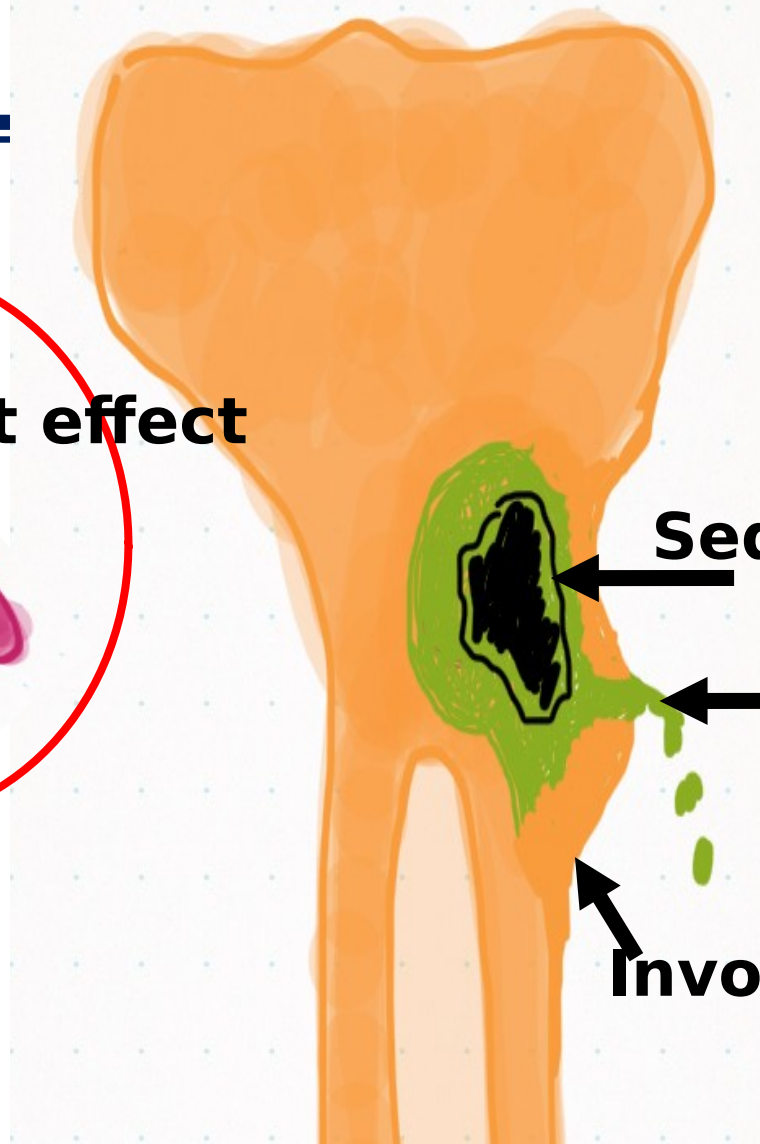


**Blocked vessels compress
anemia**

Sequestrum

Sinus formation

Involucrum



Lecture Quiz



In a 5 years old male patient with painful tender tibial swelling, a necrotic separated bony part is called:

- 1. Involucrum**
- 2. Sequestrum**
- 3. Cloaca**
- 4. Sinus**
- 5. Abscess**

Which of the following is a cause of imperfect bone healing:

- 6. Male gender**
- 7. Young age**
- 8. Hypertension**
- 9. Corticosteroid therapy**
- 10. Exercise**

SUGGESTED TEXTBOOKS



1. Robbins basic pathology, ninth Edition
2. Kaplan step 1 pathology lecture notes
2017 (P.78-98)